

by Dieffenbach, Maisonneuve, Heyfelder three times, and others. Parker's case was that of a Norwegian sailor at the New York Hospital, with a myeloid tumour involving both bones, and was successful. Wood's two operations were for phosphorus diseases of both bones." Mr. Lane reports in the *Lancet* of January 25, 1862, a removal of both superior maxillary bones in 1861, on account of aluminous(?) sarcoma. These are all the cases of this operation that I have been able to collect. I believe, however, that few of these gentlemen claim to have removed absolutely all of both bones, and that they did not leave some portion of the orbital plate, or some piece of the nasal process; but that fact does not detract from the credit due them for this important innovation in conservative surgery any more than did the loss of all of his seven cases detract from that due Larrey for originating the hip-joint amputation, or from Mott, for the operation for innominate aneurism, because his successes were only partial.

The fact that I was enabled to remove both bones through the incision on one side of the face, also serves to lessen the gravity of the operation, the loss of blood being much less than when both cheeks are divided, as recommended by surgical writers, especially as in this case the side presenting the greatest difficulties was that opposite to the incision.

The operation will, of course, be more satisfactory in a country like the United States, where modern mechanical skill does so much toward repairing the ravages of the surgeon; but in my case neither the circumstances of the patient nor the resources of the country admitted of any such attempt.

SALTILLO, MEXICO, August 17, 1875.

ART. XVI.—*Stricture of the Urethra in the Female, and its Treatment by Electrolysis.* By ROBERT NEWMAN, M.D., of New York, President of the Northwestern Medical and Surgical Society.

JUDGING from the scarcity of the literature on the subject of stricture of the urethra in the female, the conclusions would be, that such a pathological condition is of extremely rare occurrence. Little of practical application is found in our best text-books. Even the extensive writings of the most eminent specialists are nearly silent on the subject. Scanzoni does not mention it; Thomas, in his fourth edition, says nothing about the matter. Neither do Bumstead, Niemeyer, Dittel, Gouley, nor Van Buren and Keyes. The latter two, in their extensive work on the surgical diseases of the genito-urinary organs, including syphilis, are silent on the subject.

The medical literature to which I have access, including the medical

periodicals of both Europe and this country, have been searched, and but few cases were found to which attention can be called.

Boucher, in the *Gaz. des Hôp.* No. 16, 1865, reports one case, cured by gradual dilatation. Boehm mentions another in *Berlin Cent. Zeitung*, No. 84, 1868. It was a traumatic injury, the stricture depending on direct accident, produced by a splinter of wood. After two years of intense suffering, the patient is reported cured.

Dr. Gross dismisses the whole question by saying: "The female urethra is rarely diseased. The principal lesions are strictures, etc. etc." Not a word, however, about its diagnosis, treatment, or anything relative to that pathological condition. Dr. Gunning S. Bedford says: "Stricture of the urethra in the female is extremely rare," and cites one case. Velpeau, in his great work, cites only three cases, *en passant*. Holmes, in his exhaustive work on surgery, is comparatively silent on the subject under consideration. Ashwell, Simpson, and many other writers say nothing about this disease.

In my practice a small number of such cases have occurred, but during the last eighteen months the unusual number of four well-defined cases of stricture of the urethra in the female have come under my observation and treatment.

Stricture of the male urethra has been successfully treated by electrolysis, and the favourable results of the method have strictly fulfilled the ideal demands of its theory, and, on the whole, the results having surpassed the most sanguine expectations, no valid reason could be adduced why electrolysis should not accomplish the same in stricture of the female urethra. Hence, the purpose of this paper is to tabulate the clinical facts, and to bring to notice this class of troublesome ailments, which certainly are of more frequent occurrence than the authors and specialists lead us to infer from their writings. The subject becomes pertinent at this time, because of the controversy which is just now going on between the exponents of the different plans of treatment, each urging his particular views on the attention of the surgical world.

The following four cases from their history and subsequent success will show the efficiency of what may be considered a new operation. They were of long standing and complicated with other diseases, and therefore less favourable.

The differential diagnosis being an important factor for the successful treatment, endoscopic examination is of the utmost value. To examine the urethra not merely through the sensation obtained by the touch, but also by vision, is an advantage so self-evident, that little need be said in favour of its employment. In the cases under consideration the endoscopic examination was made.

CASE I. *Tertiary Syphilis; Indolent Ulcers on Leg; Stricture of the Urethra; Electrolysis; Cure.*—Feb. 12, 1873, Mrs. M. R., æt. 35, widow,

a clandestine prostitute, very obese, calls at the office; is suffering from indolent ulcers on foot and leg. One foot is swollen, œdematous, sore, inflamed, red, and very painful; on anterior aspect of foot and over the tibia are large and deep holes reaching down to the bone, surrounded by ragged edges and boggy tissue. The indolent ulcers discharging foul, unhealthy, ichorous matter, which burrows through the adjacent tissue. The periosteum of both tibiæ is thickened, excessively painful and sensitive to the slightest touch, particularly at night. Other bones are similarly affected, especially those of the cranium. Adenitis, syphilitic dyscrasia. A minute history could not be ascertained, but she admitted primary infection, and the present symptoms are so well marked as not to be misinterpreted. She made the reluctant admission, that she has been for some time under treatment for the ulcers on her legs, which heal sometimes, but invariably break out again and again.

She passes water only in a small stream, with intense pain, and succeeds in slowly emptying the bladder only after much straining.

Examination.—The urethra is found to be contracted and of small calibre. The meatus is deeply seated, and recedes behind the pubes on the slightest touch, inverts and rolls upon itself; this, no doubt, depends, in part, upon her obesity, and therefore difficulty is encountered in the introduction of a flexible bougie. Then a whalebone bougie à boule entered only partially, and met with a hard contracted stricture, conveying a parchment feeling to the fingers and arresting the bougie at three-fourths of an inch from the meatus. The attempt to introduce a short steel sound, with the hope of dilating the stricture, failed; the manipulation caused so much pain, that no further means were employed, for the present.

Believing that the stricture was wholly dependent on the syphilitic condition of the patient, and would yield to general constitutional treatment, all local measures were deferred. A specific treatment was at once pursued, and in the course of two months she took two ounces of iodide of potassium. The ulcers were dressed with adhesive plaster and rollers; using even compression.

April 15. The ulcers have disappeared; legs are covered with healthy skin. No symptoms remaining indicating the former disease. The bones have lost their former acute sensibility, which had caused her so much suffering. She appears to be cured of the constitutional disease. On examination, the stricture of the urethra is found, contrary to expectation, to be in the same condition as before, and local treatment was commenced. The exploring bougie imparts to the finger the sensation of passing over a substance like parchment. A No. 5 sound passes into the stricture nearly one inch from meatus, and there is tightly grasped. Dilatation was perseveringly tried without any appreciable effect.

22d. *Electrolysis.* The positive pole of a Drescher 20-cell galvanic battery with sponge electrode was held in the palm of the hand of the patient. To the negative pole a No. 8½ olive-shaped metallic bougie was attached, the extremity of which measured number six; this was introduced into the meatus. The galvanic current was then gradually increased up to 10 cells. The bougie slowly and gradually advanced, and after two minutes passed into the bladder. Immediately afterwards a No. 11 bougie was introduced in the same manner as before, with a like favourable result. The whole operation was completed in five minutes.

26th. The patient reports herself better in every way, and is much improved, has no pain, nor does she suffer from any difficulty in micturating since the galvanic application was made.

May 14. Electrolysis. Nine cells of the same galvanic battery were used in the same manner as on the previous occasion. A No. 13 bougie enters the urethra gradually and with perfect ease. The current was kept up for ten minutes.

31st. The patient reports herself well, and expresses much gratification at the favourable result of the treatment. She is kept under observation; and on

October 31, 1874, I made a careful examination again, and found the urethra completely restored. The cure must be considered perfect, as seventeen months have elapsed since all treatment has been left off, and the patient had no relapse nor the slightest urethral trouble of which to complain.

This case has many interesting features; not the least is the fact that this patient suffered for years from syphilis. The stricture did not yield after the otherwise successful constitutional treatment; and, while all the symptoms of syphilis left her during the two months of the specific treatment, no effect whatever on the stricture was observed. It was only when galvanism was employed that the stricture of the urethra yielded. No doubt can be entertained that electrolysis, and nothing else, cured the stricture.

CASE II. *Granular Urethritis; Stricture of the Urethra; Retroflexion of the Uterus; Endoscopic Examination; Galvanism; Cure.*—*May 15, 1873,* Mrs. M. D., æt. 32, married three years, has one child two years of age. Menstruation, as a rule, regular, but occasionally appears prematurely, lasts six days, and is accompanied by menorrhagia. Is anæmic and of nervous temperament. Has a frequent desire to micturate, with vesical tenesmus. Complains of a peculiar pain, which appears to be due to some spasmodic action of the urethra. The urine occasionally contains blood. Sleeps well at night, and is not then troubled with any of the above symptoms. She passes water six or seven times a day in a small stream; urine is acid and free from albumen; some epithelium; nothing peculiar, however, is discovered in the urine; passes from three to four pints of urine in the twenty-four hours; pulse, 88; temperature, 101. For this very interesting case I am indebted to Dr. A. Murray of this city, who kindly sent her to me. On examination of urethra and bladder by whalebone bougie-à-boule, she feels a slight irritation but no pain.

20th. Endoscopic urethral examination. A small No. 10 tube enters the meatus, encountering a stricture at seven-eighths of an inch from its entrance. The whole tract of the urethra is in a state of irritation, and at some points granulating surfaces are discovered, which were touched by Desormeaux's solution, of one part of nitrate of silver in three of water.

24th. Urethral electrolysis with No. 11 metallic bougie at the negative pole; the sponge electrode of the positive pole held in the palm of the hand of the patient, 8 cells of Drescher's battery were used. The galvanic action produces by degrees a soothing effect by its chemical action. The bougie enters, and, after four minutes of the galvanic application, the stricture itself is penetrated, and an entrance to the bladder effected. The uterus is replaced with the uterine sound. Quinia and tonics are prescribed.

27th. Urethral galvanization as on the previous occasion. The bougie

electrode enters the urethra easily ; no pain or inconvenience is felt during the operation. Uterus replaced as before. Quinia and tonics continued.

30th. Urethral granulations at one inch and at an inch and a quarter from the meatus, to which Desormeaux's solution is applied. The appearance of the urethral walls very much improved. The patient feels better in every way.

June 6. Treatment as before. A No. 13 bougie now passes readily through the whole tract of the urethra and enters the bladder without the slightest difficulty or inconvenience.

13th. Menstruation was expected on June 2d, but has not appeared. Feels nausea in the morning, and suspicions of pregnancy are entertained. The solution of nitrate of silver was applied through a tube to the granulations of the urethra.

26th. Galvanism, bougie No. 13 passes easily along the whole of the urethra into the bladder. Granulations have disappeared ; urethra has now a normal calibre ; she reports well.

October 14, 1874, sixteen months after treatment, Dr. Murray writes:—

" After some trouble I was able to get some information regarding Mrs. D.'s case. I have been informed that your treatment made a complete cure. She has removed to Illinois and had a young son lately," etc.

CASE III. *Stricture of the Urethra ; Urethritis ; Electrolysis ; Cure.*—April 24, 1874. Mrs. M. G. M., æt. 44 years, widow, the mother of six children, had the last child eleven years ago. Seven abortions, the last fourteen years ago, at ten weeks. This lady has been my patient several years ; was treated formerly by me for dysmenorrhœa, menorrhagia, and metritis ; has enjoyed pretty good health for several years. She now complains of frequent micturition ; at one time she suffers from enuresis, at others she is afflicted with dysuria. Complaints of soreness and pain in micturating ; considerable urethralgia is present, as indicated by the burning and scalding sensation after the act. Endoscopic examination reveals an extensive inflammation along the tract of the urethral canal. The mucous lining is swollen and thickened, and of a dark red colour. Along the walls is loose epithelium, and a circumscribed ulcer is observed, very painful to the touch, and three-quarters of an inch from the meatus urinaris the stricture is seen and felt. A No. 6 bougie passes with some trouble, and transmits to the finger a feeling which very much resembles that of running over paper. The ulcer touched with Desormeaux's solution—argent. nitrat. 1 part, aqua 3 parts. No pain is caused by this application ; on the contrary, she expressed relief from it.

May 1. Electrolysis. Positive pole, with sponge electrode attached, grasped in the palm of the hand of the patient. To the negative pole is attached a bougie No. 12, and introduced into the urethra. This operation causes a little soreness, which is no doubt due to the morbid sensibility of the canal and its inflammatory condition. Nine cells were used during four minutes, when the bougie easily, slowly, but gradually passed through the stricture, and entered the bladder. It may as well be here remarked, that the nine cells were used gradually up and down. After the circuit is completed, and stands at 0, it is gradually increased cell by cell until the current produces a feeling of warmth and a slight pricking sensation. All this time the electrode is working its way through the obstruction, causing no pain, which should always be avoided. When the operation is finished, the current is decreased by drawing the slide back, until it stands at 0 again. At the expiration of the four minutes all pain

ceased, and the bougie could be freely moved in all directions without causing the slightest pain or inconvenience.

5th. Improved in every respect. Micturition not exactly normal yet; still, the desire to pass water is not so urgent as before the operation, and she retains it for a longer period. Electrolytic treatment is repeated in the same manner as on previous occasion. The No. 13 bougie was replaced by a No. 12. Eleven cells were employed during eight minutes. A marked improvement is observed; there remains but little sensitiveness at the meatus urinarius.

8th. A slight application to the sore spot in the urethra with Desormeaux's solution was made through a glass tube.

12th. Same treatment as before with a No. 12 bougie; eight cells during seven minutes. She complains of a little sensitiveness at the meatus on the introduction of the bougie. After the galvanic application the catheter was introduced, causing no pain, nor the slightest unpleasant feeling. The urethra, after careful exploration, is found in good condition, and the patient feels well.

15th. The urethra and bladder, after examination, appear well. The patient complains of no inconvenience. She says that she is well, and that there is no trouble left.

June 1. The patient has not been troubled since the last *séance*. Galvanism used during five minutes, seven cells. No. 15 bougie enters the urethra and bladder with facility. Patient is well, but kept under observation.

One year afterwards enjoys good health, without having had the slightest relapse.

CASE IV. *Stricture of the Urethra; Fibrous Band and partial Urethrophraxis; Electrolysis; Cure.*—July 7, 1874. Mrs. J. C., æt. 28 years, widow. During the last two years has been troubled with difficult micturition, and now can only succeed in the erect position. The act even then is performed with great difficulty, and the water voided in a very small stream. At times she suffers from dysuria, notwithstanding the urgent desire to micturate. To all this is superadded spasm of the bladder, producing most agonizing pain. She believes that some two years ago she contracted blenorrhœa, which was communicated to her by her husband, and for which she received appropriate treatment. For a long time she was under the care of a physician, who injected into her urethra a strong solution of nitrate of silver, which gave her great pain. The difficulty has gradually increased until now, when she is almost powerless to void urine. It may be fairly asserted that the cause of this stricture was the caustic injection used. Simple urethritis may create a stricture just as well in the female as in the male; but in the former will not cause such a degree of urethrophraxis as we find in this case.

Examination.—The meatus urinarius is very small and contracted, high up in the vestibule, and can neither be seen nor defined by the touch—in fact, almost obliterated. Bougies of different sizes and forms were tried, but no entrance of the urethra could be effected. A small No. 1 could not be introduced; it was almost a case of atreturethria. Fortunately I found in my armamentarium an extra small sound, which had been manufactured for the special case of a male infant. After a long and patient manipulation an entrance was effected with it. Then electrolytic application was made in the same manner as in the previous cases. A No. 6 metallic olive-shaped bougie was pressed with its smaller extremity

against the meatus urinarius. The statement "pressed against the meatus" is meant literally, as even the pointed *small* extremity of the olive-shaped bougie could not enter the meatus. Eleven cells of the galvanic battery were employed during five minutes. The bougie made but slow progress, still it steadily advanced till it had penetrated to half an inch from the meatus, where a fibrous band was distinctly felt, stretching across the urethra, and a true urethrophraxis was made out, which no doubt acted mechanically as an impediment to the flow of urine. By degrees this obstruction was overcome by the galvanic action and electrolytic absorption. I will not attempt here to describe how such absorption is effected, as the theory of such electrolysis, the physiological effect of electrolysis on mucous linings, the therapeutical action, the method of application, experiments and cases, have already been described in a paper read before the Medical Society of the State of New York in 1874, and published in advance of the *Transactions*, in the *Archives of Electrology and Neurology* for May, 1874, to which I refer. Another distinct stricture was found at the end of the urethra, an inch and a half from meatus, just where the canal emerges into the bladder. After the operation the patient complained of soreness in the urethra, and a feeling as if there was a substance which wanted to pass off. Two days subsequently there emerged from the urethra a carneous plug, so well described by Mr. Cullier. The urethra being relieved from this obstruction, the immediate result was very gratifying to the patient, and she at once passed a large and full stream of urine, without pain or any difficulty whatever, which she had not done for years before.

13th. A little urethral soreness is complained of, a mild galvanic current is applied, five cells for three minutes, during which a No. 9 bougie with metallic end is passed through the whole extent of the urethra, and entered the bladder without the slightest impediment or difficulty.

20th. Galvanism. Bougie No. 11 enters the meatus urinarius with difficulty. By patient manipulation and the avoidance of all force or pressure, the progress of the bougie entirely left to the electrolytic action, an entrance is effected. The difficulty, which is here experienced, evidently does not depend on the want of urethral calibre, but is entirely due to contraction of the meatus. To facilitate the entrance of the urethra in this case, choice was made of the olive-shaped bougie, which is selected in cases of the female urethra, or at the meatus of the male urethra, when the progress of the instrument can be seen, and felt, and guided by the finger. The advantage lies in the extremity being pointed, and several numbers smaller than the principal part of the bougie; this small point will pave the way for the larger full size, and thereby makes more progress in one *séance*. But this very same point is dangerous in deep-seated structures, when it cannot be guided by sight and touch, and may make a false passage. For this reason I prefer, as a rule, the egg-shaped bougies, and can operate with the latter with more safety.

August 20. Some difficulty is still encountered. The principal obstacle is at the meatus, but yields much sooner, and is overcome with less trouble, than in former attempts.

September 1. Galvanization, in the same manner as in former *séances*, with olive-shaped bougie No. 15. The remains of the fibrous bands are distinctly felt at half an inch from meatus, and obstruct the entrance of the bougie, but the obstacle is soon overcome by the electrolytic action. No further trouble is experienced. The urethral calibre is large enough

to permit a No. 15 bougie to slip through the canal into the bladder, without the slightest difficulty or inconvenience.

7th. A large sound passes easily.

Patient reports well.

The lady has been kept under observation to date, and remains well. The cure is complete and permanent of what may be called an unusually bad stricture. Five operations were necessary, before a satisfactory result could be recorded. The intervals between successive operations were shorter than the time that is usually advised in the case of males. But many of the objections against too frequent operations in males are met. Because it will be observed that a somewhat modified, and indeed a very mild current was made use of, and for a short time. It is surmised that the peculiar process of the electrolytic action, both chemical and mechanical, depends much on this mode of application of galvanism.

It is well known that the chloride of zinc has a great affinity for the albuminoids and gelatines. Now the mucous surface from which this bridle took its origin, being of an albuminous nature, the zinc-pole acted by the well-established law of chemical absorption, the albumen being absorbed, the deposit was detached from the walls of the urethra; the carnosity lay loose in the urethra, and was expelled by the *vis-à-tergo* of the urine. That this plug was the product of the electrolytic action of the galvanic battery appears to be absolutely certain.

A report of the following case of spasmodic stricture is added in order to show the differential diagnosis and treatment between true and spasmodic stricture, and also the importance of discriminating between organic and spasmodic strictures.

CASE V. *Spasmodic Stricture of the Urethra; Rectal Ulcer; Endoscopic Examination; Electrolytic Treatment; Cure.*—July 9, 1873. Mrs. M. K. æt. 29 years, the wife of a labourer, married four and a half years; three and a half years ago she aborted at three months; dates her trouble from her miscarriage, previous to which she enjoyed invariable good health. Before she came under my notice, she had been under the treatment of some eminent gynecologists, for oophoritis, pelvic abscess, cystitis, etc. She now complains of pain in and along the whole urethral canal, particularly after micturition. There is complete retention, after scanty menstruation ceases. She passes but little urine, about one quart in three days, and during the last twelve hours three ounces is the whole amount she has passed. She is nervous and hysterical; bowels are nearly regular; urine almost normal, acid reaction, no albumen; phosphates are present, but in small quantity, a little flocculent deposit in phial. Microscopical examination reveals nothing abnormal. Ordered a diuretic emulsion.

She thinks, that the last medicine caused a desire for frequent micturition, and she has to void it every ten minutes. She discontinues the medicine, enuresis is arrested, and she micturates without difficulty. The previous symptoms are gone.

Examination.—Uterus normal in every respect. The sound meets at first with a little spasmodic resistance, but in a few moments enters the uterine cavity in a normal direction up to two and a half inches. On

examination some capillary congestion is discovered at the meatus urina-rius, which is found red and highly sensitive. The calibre of the urethra is narrowed, the sound is spasmodically grasped on its entrance. After dilatation, a glass tube No. 10 enters with some difficulty, causing a little bleeding. Light thrown into the urethra reveals an inflammatory condition of the parts. No granulations are discovered, but a circumscribed spot is seen denuded of epithelium. This was touched with Desormeaux's solution, causing no pain or inconvenience.

21st. The catamenia have appeared

26th. Patient is very hysterical; complains of a multiplicity of ills, viz., throat, irritation of the bladder, flatus, rectal pain, violent lumbago, etc. etc. Urethral galvanization. Bougie No. 11 as negative pole, enters without the least difficulty at once. As soon as the galvanic current entered the body, all pain ceased at once.

31st. Increased hysterical symptoms. Examination with anal speculum reveals small internal hemorrhoids.

August 2. Endoscopic examination. A large rectal exploring tube entered the rectum with ease up to $3\frac{1}{2}$ inches, at which distance it is arrested. There the patient complains of pain, and, to use her own expression, says: "Ah! doctor, I am confident that there is the origin of all my trouble." The ocular inspection per endoscope reveals an ulcer at $3\frac{1}{2}$ inches from the sphincter ani, on the left side of the rectum, which on the slightest touch bleeds. Desormeaux's solution of nitrate of silver applied to the ulcerated surface, which immediately controlled the bleeding. No pain was caused by the application; on the contrary, relief is at once experienced.

12th. She reports herself well. On examination the rectum is found in a healthy condition; the ulcer has disappeared; so has the stricture of the urethra. The patient is much gratified, as she considers herself perfectly cured.

The value of endoscopic examination is here proved beyond a peradventure.

This stricture was spasmodic, and wholly dependent on the pathological condition of the rectum, because, it will be observed, as soon as the ulcer was discovered, and the source of irritation removed by appropriate treatment, all the bad symptoms ceased, and immediate relief followed. One point should be noticed, viz., the soothing effect of the galvanic current. Galvanization has powerful anodyne properties, as evinced in the above case, all pain having immediately subsided as soon as the patient came under its influence.

While it is conceded that the principal effects of electrization are tonic and stimulant, nevertheless there can be no doubt that this agent may be classed among the calmants and sedatives.

The early writers on electro-therapeutics speak of its sedative properties. The experiments of Onimus, Le Gros, Althaus, Meyer, and others have confirmed this. Hiffelsheim concedes the tonic and stimulating effect of electrization, but asserts and maintains that the current may become sedative in the same manner as those remedies which are classed among stimulants and tonics under certain circumstances become sedatives. The

further deduction drawn from the preceding case is, that galvanism here acted as an anodyne or sedative; that its therapeutical effect was such as to render it nearly positive; that the sudden and immediate relief from pain may be ascribed with professional certainty to its soothing action. Of course it is not to be understood that *all* ulcers will become amenable to the same treatment, nor heal by the same means; some will assume an indolent character, depending on many causes; still, may not the principal reason be found in the fact that the pain which they produce acts as an irritant on the margin of the ulcerated surface, which is thus kept in constant involuntary vibration, a condition observed in the ulcerated surface of the sphincter or anal fissure. In these cases opiates or sedatives are exhibited in small doses. These accomplish the same thing as galvanism, by giving rest to the nervous system. The pain being relieved, the healing of the ulcer is certain.

Galvanism here is both sedative and soothing in its action on the ulcerated surface.

Conclusions.—By grouping and recapitulating these cases as they appear in my case-book, the following conclusions may be drawn.

Five cases of stricture of the urethra in the female, viz. :—

One spasmodic stricture (not a stricture in reality), Case V.

Four real organic strictures, of which two were inflammatory, Cases II. and III.; and two were fibrous, Cases I. and IV.

As to causation, as far as the history of each case could be ascertained, it was as follows :—

Case I. was due to syphilis.

Case IV. was due to irritating injection in gonorrhœa.

Case II. was due to granular urethritis, a sequel of confinement, and probably aggravated by the displacement of the uterus.

Case III. was due to urethritis.

In Case V., the spasmodic stricture was due to reflex irritation, induced by ulcer of rectum.

The *seats* of the strictures were respectively: at the meatus—one-half inch—three-quarters of an inch—seven-eighths of an inch distant from the meatus; one case involving almost the whole urethra. These facts seem to prove that a stricture in the female urethra may appear in any part of the canal.

In the measure of severity they range from the slight diminution of the calibre up to almost complete atresia.

Now as to the *treatment*. It is claimed that electrolysis, and nothing else, cured the patients with organic stricture whose cases are here under consideration. Each case had received its appropriate treatment, and failed. When electrolysis was called upon, it succeeded. It is, therefore, absolutely certain that the last was the only factor which can be taken into consideration, and to which these cures can be reasonably ascribed.

This agent, tried by the severe tests and scrutiny of experience in strictures of the urethra, takes, therefore, a prominent place among our most useful agents. Indisputable statistical facts constitute the data upon which the opinion favourable to that kind of treatment has been formed. In three of the above recorded cases electrolysis was the curative agent which accomplished what specific medication had failed to do. Now, it might be argued, and that with some show of reason, since the female urethra is easily dilatable, that simple dilatation, if used diligently, would accomplish more and in a better manner than is claimed for electrolysis.

To this argument there are many answers; but the most perfect would be, that while the urethra in its *normal* state is easily dilatable, and in many case we might be able to introduce the finger deeply, even reaching the fundus of the bladder, it is quite another affair when the urethra is in an abnormal condition, such as inflammation, fibrous bands, and even atresia, in which the dilatation becomes impossible. However, while objection to the treatment of strictures of the urethra by galvanism may be made, and will, of course, receive all the consideration to which they may be entitled, it nevertheless illustrates, in the cases here recorded—

1st. That other means had been tried and failed.

2d. That electrolysis did cure strictures varying in calibre from No. 1 to No. 8, effectually and permanently.

The certainty of the permanence of cure depends on the fact that the patients so treated were kept under observation, have remained well up to this date, and none have suffered a relapse.

Galvanism as a therapeutical agent is daily receiving a considerable amount of favourable consideration from the profession; still it has scarcely obtained, I think, the credit it really deserves. Much of this appears to depend on its use in cases where experience has shown it to be ill adapted for its exhibition, and where failures are recorded, in all probability the cases were improperly diagnosticated or selected.

In conclusion, no apology need be offered for bringing a class of troublesome ailments to the consideration of the profession, which certainly are of more frequent occurrence than the scarcity of recorded cases would lead us to suppose; and if this paper has added a practical thought to the general knowledge of that distressing pathological condition called stricture of the female urethra, or if it should induce others to investigate the subject, I am amply rewarded.

No. 145 WEST 47th St., NEW YORK, May, 1875.